

# Fetomaternal Complications by Giardiasis in Pregnant Female: A Case Report

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## ABSTRACT

Among the World Health Organisation's (WHO) neglected parasitic diseases, giardiasis caused by *Giardia lamblia* is significant due to its morbidity and mortality, in the form of diarrhoea and malabsorption, affecting children, adults and travelers. Since it is transmitted by contaminated water and food, with minimum infective dose of just 10 cysts, burden is greater in developing countries. In present case report, a 30-year-old pregnant female suffering from prolonged diarrhoea presented to the Emergency Department in shock. Stool culture revealed no significant pathogens; however, a wet mount preparation showed motile trophozoites with a falling leaflike motion, leading to a diagnosed as case of chronic giardiasis. This condition resulted in massive fluid loss and oligohydramnios, ultimately causing Intrauterine Foetal Death (IUID). The patient was treated with tinidazole given as primary treatment with correction of hypovolemia and shock. Patient was referred to higher centre for IUID management. Since most reports of this infection focus on children, this case report of an adult pregnant female highlights the necessity of screening diarrhoea patients, especially pregnant females, through stool routine microscopy as rapid method for diagnosing such parasitic infections in order to prevent complications.

**Keywords:** *Giardia lamblia*, Intrauterine foetal death, Neglected parasitic diseases, Wet mount microscopy

## CASE REPORT

A 30-year-old pregnant female, with seven months of amenorrhoea, residing in slum area and working as labourer, and belonged to lower socio-economic class, presented with unconsciousness to the Emergency Department. On examination, blood pressure was 90/60 mmHg, accompanied by tachypnoea, tachycardia and narrow pulse pressure. Oxygen Saturation (SpO<sub>2</sub>) was 98% maintained with two litre of oxygen. All of this was drawing towards signs indicated hypovolemia and shock.

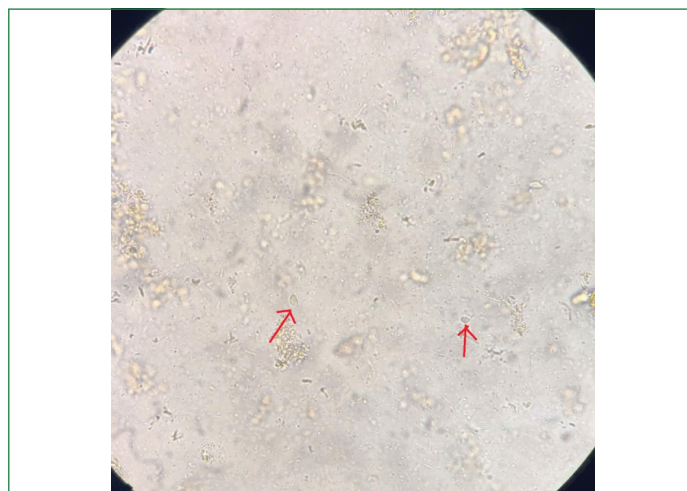
The patient had been experiencing abdominal pain and profuse foul-smelling diarrhoea since past 10 days, and food poisoning was ruled out. There was an absence of physical trauma or injury. Upon obtaining a detailed history from her relatives, it was revealed that she had experienced similar episodes of diarrhoea prior in 2<sup>nd</sup> trimester of this pregnancy, which had been managed symptomatically and by over-the-counter antibiotic medications that she had taken by her own. Fever, vomiting and white discharge were absent. There were no immunocompromising conditions, like tuberculosis or Human Immunodeficiency Virus (HIV) infection. Pregnancy-related complications, such as gestational diabetes and preeclampsia, were also absent.

Her personal hygiene, water storage facilities and cooking practices were seemed to be not good. Patient was under the combined management of the Medicine and Gynaecology Departments. Ultrasonography (USG) revealed a twin pregnancy with oligohydramnios, and unfortunately, cardiac activity was absent in both of foetus suggesting IUID.

Complete Blood Count (CBC) revealed a haemoglobin level of 12.2 gm%. The total White Blood Cell (WBC) count was raised to 16,180 cells/cumm with neutrophilia. Platelets were within the normal range (1.8 lakh/ $\mu$ L). Electrolyte profile showed hyponatremia (serum sodium was 102 mEq/L). C-reactive Protein (CRP) was 63.86 mg/L, and D-dimer level was raised to 5,340 ng/mL along with increased serum urea (91 mg/dL) and serum creatinine (5.60 mg/dL), while serum total bilirubin remained normal (0.7 mg/dL). The patient has blood group of A-positive. Physician corrected hypovolemia and

shock with fluids, and broad-spectrum antibiotics were started, along with metronidazole for diarrhoea. Next day stool sample sent to microbiology laboratory of present hospital for routine microscopy and culture sensitivity tests.

By macroscopic examination revealed that the stool was watery in consistency, pale in colour and having offensive odour. No significant stool pathogens, including *Salmonella* spp., *Shigella* spp., and *Vibrio cholera*, were isolated on stool culture. Microscopic examination by saline wet mount preparation revealed organisms with falling leaf motility of trophozoites [Table/Fig-1]. On the Lugol's iodine mount, pear-shaped cysts were noted, leading to the diagnosis of *Giardia lamblia* causing chronic infection. The anti-giardia drug tinidazole (2 g oral) was added to regimen.



**[Table/Fig-1]:** Image showing trophozoites of *Giardia lamblia* on saline wet mount (Zoomed view, 40x).

According to previous USG reports, no placental or foetal anomalies seen. By seeing on mother-side, there was no Pregnancy-induced Hypertension (PIH), normal thyroid and sugar profiles along with no heart diseases detected. The Toxoplasmosis, Other (like syphilis), Rubella, Cytomegalovirus (CMV) and Herpes Simplex Virus (TORCH)

profile was also negative. Hence, all other possible causes for IUFD were ruled out. So chronic diarrhoea caused by *Giardia lamblia* resulted in massive fluid loss, which led to oligohydramnios; this was determined to be the ultimate reason for IUFD in present case. For further management of IUFD, the patient was referred to higher centre after correction of shock and hypovolemia.

## DISCUSSION

One of the earliest known protozoan parasites, *Giardia lamblia* was discovered by Antonie van Leeuwenhoek in his own stools. It was named after studies conducted by Professor Giard and Lamble. This parasite is widely distributed and causes diarrhoea not only in children but also in adults and travelers [1]. According to estimates from the WHO, there are over 280 million cases prevalent, mostly in Africa, Asia and America [2,3]. The prevalence of giardiasis is 2-5% in developed countries and 20-30% in developing countries, with a range of 3.8-23.5% in India [4].

Apart from the routine fact that giardiasis is transmitted through the ingestion of contaminated water and food, causing diarrhoea and malabsorption in children, the authors presented a case of the dreaded systemic manifestations of giardiasis in a pregnant female, along with prevention and control measures. Most studies on giardiasis have focused on the paediatric age group; thus, the present case involving an adult will undoubtedly guide and inform medical professionals about the serious and life-threatening manifestations of giardiasis.

Since 2004, the WHO's neglected disease initiative has included giardiasis [2,4]. Although children are commonly affected, the infectious form, the mature cyst and the minimum infective dose of 10 cysts indicate that adults are also susceptible to this infection [1]. Pregnancy is considered a low-immunity situation, increasing the chances of acquiring infections. In developing countries, especially in slum or overcrowded rural areas, issues such as sanitation, maintenance of water supply, and hand and personal hygiene is big issue. So many working pregnant females present in these conditions and that's why they are more prone to parasitic infections. These infections are often asymptomatic or self-limiting in immunocompetent individuals. *Giardia* is one such parasite and is, in fact, one of the common causes of waterborne outbreaks. A seasonal tendency has been noted for this infection, particularly from May to October, during the summer, monsoon, and post-rainy period [4].

After exposure and ingestion of cysts via food or water, *Giardia* hatches out into trophozoites and colonises in duodenum [1]. It attaches to epithelial cells via sucking disc, causing lesions in the villous borders. This, along with the virulence factor Variable Surface Proteins (VSP), increases intestinal permeability and leads to diarrhoea [3]. Common symptoms include abdominal pain, malabsorption and weight loss. In adults, chronic sequelae can manifest as fatigue, irritable bowel syndrome and joint pain, while in children, failure to thrive is common outcome [3].

The above factors, along with fact that the blood group A enhances susceptibility to this infection [1], were present in this pregnant female. Similar episodes of diarrhoea earlier in the pregnancy suggest that patient was suffering from chronic giardiasis. Patient was suggested drugs for diarrhoeal symptoms only, without doing laboratory diagnosis in stool sample. Haemoglobin was normal as of haemoconcentration resulting from hypovolemia. Symptoms eventually worsened, leading the patient to enter a chronic stage and more profuse diarrhoea and massive fluid loss, which resulted in hypovolemic shock. This affected her twin pregnancy, as fluid loss leading to oligohydramnios and finally IUFD occurred.

Considering the above-mentioned factors, it is very important to evaluate patient with diarrhoea for parasitic diseases, especially in pregnant females in tropical and subtropics by just suggesting stool for routine microscopy test.

There are few studies on giardiasis done on adult patients [Table/Fig-2] [5-9]. Chronic diarrhoea was the most common symptom present in all studies [5-9]. In the study of Karadbhaine P et al., a case was described of a first-trimester pregnancy where the patient experienced abdominal pain and vomiting in early stage, followed by anaemia and no weight gain. This patient was diagnosed through a field survey by stool routine microscopy and treated accordingly.

Study	Age and gender	Symptoms/Complications
Present study	30 years/ pregnant female	Chronic diarrhoea followed by hypovolemic shock and IUFD.
Karadbhaine P et al., [5]	26 years/ pregnant female	Abdominal pain and vomiting with pasty stool, No weight gain for 1 month in pregnancy. Anaemia was noted as complication.
Corleto VD et al., [6]	42 years/ female	Chronic abdominal discomfort and change in bowel movement.
Pessarelli T et al., [7]	A female in her 40s	Features of pseudo-obstruction for 2 weeks and abdominal discomfort, loose stool and weight loss for last 6 months.
Javed IN et al., [8]	64 years/ male	Fatigue and abdominal pain for 6 months and microcytic hypochromic anaemia.
Groudan K [9]	59 years/ male	Alcoholic cirrhosis, chronic hepatitis C, and hepatocellular carcinoma presented with 2 weeks of abdominal distention, watery diarrhoea.

**[Table/Fig-2]:** Reported cases of giardiasis in adult patients [5-9].

Diagnosis of giardiasis is often done by identification of cyst and trophozoites in stool microscopy, which is a simple identification technique for most parasites. Despite being less sensitivity of stool microscopy [4], this simple wet preparation helps to screen parasites rapidly and to start early preventing further infection spread to the community. Other methods for laboratory confirmation include antigen detection using Enzyme-linked Immunosorbent Assay (ELISA) and immunofluorescence tests. For treatment, drugs in the nitroimidazole group, such as metronidazole and tinidazole, with latter being more effective, are available [1]. Oral paromomycin, an aminoglycoside, can be given in pregnancy [1]. Nitazoxanide is also useful, and combination therapy may be required for chronic and refractory cases [10].

To prevent the spread of giardiasis within the community, it is necessary to screen high-risk populations, especially those living in slums and pregnant females, while also ensuring proper monitoring of wastewater and faeces disposal. The cyst stage, which passes in stools, is resistant to chlorination and ozonization, remaining viable for weeks in cold water [11]. Therefore, it is essential to practice water use after boiling and filtration and to maintain hand washing and personal hygiene. Community education regarding awareness of commonly transmitted food and water-borne diseases will also be beneficial.

## CONCLUSION(S)

The present case report highlights the tendency of *Giardia* to infect adults, not just children, and emphasises that neglecting this infection can lead to dreaded complications. Hence, by studying present report, health professionals will become aware of the presence of *Giardia* infection in pregnant females, leading to fatal complications. So, females with diarrhoea in pregnancy, belonging to developing countries, should be screened for parasitic infection by doing stool routine microscopy and treated with appropriate therapy to reduce burden of maternal and foetal mortality. Early detection and prompt treatment with hygiene, educating population will be helpful against further spread of this neglected disease.

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